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CENTRAL INTELLIGENCE AGENCY
INFORMATION FROM
FOREIGN DOCUMENTS OR RADIO BROADCASTS

REPORT [redacted] STAT

COUNTRY Poland

DATE OF INFORMATION 1950

SUBJECT Economic - Chemical industry

HOW PUBLISHED Monthly periodical [redacted]

DATE DIST. 13 Mar 1951 STAT

WHERE PUBLISHED Dusseldorf

NO. OF PAGES 8

DATE PUBLISHED Sep 1950

LANGUAGE German

SUPPLEMENT TO REPORT NO.

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SOURCE Chemische Industrie, No 9, 1950.

SURVEY OF THE POLISH CHEMICAL INDUSTRY

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Frankfurt/Main

Poland has the greatest industrial potential of all the countries within the Soviet sphere of influence. She has valuable raw materials in her immense coal reserves and an extraordinary arsenal of industry in the recovered East German territory. The main goal of the Polish administration since 1945 has been to exploit these possibilities rapidly and to the fullest extent.

The reconstruction of Polish industry, which was heavily damaged by the end of the war, has been executed, up to now, in two stages. During the first stage, 1945-46, production was started on a minor scale only, and the emphasis was placed on the output of consumers' goods. During the second stage, 1947-49, the key industries were reconstructed. At the same time, other less important branches, such as the paper, leather, furniture, and cosmetic industries, also received an increase in their production potential through large investments. In 1947, the chemical industry acquired investments valued at 2,460,000,000 zlotys, of which 606 million were for soda factories, 513 million for fertilizer and sulfuric acid industries, 417 million for coking plants, 260 million for refined chemicals and medical products industries, and 223 million for rubber factories.

In 1948, the investment total was increased to 7,800,000,000 zlotys; thus the amount has more than tripled since 1947. In 1949, the amount of investments in the chemical industry rose still higher, so that the prewar level of production in various branches was exceeded considerably.

An entirely new period of development has begun with the Six-Year Plan, starting in 1950. The chemical industry was assigned the task, within this period, of effecting a greater increase in the production of heavy chemicals and fertilizers and of replacing the obsolete factories with modern installations using efficient work methods. In addition, the chemical industry is expected to promote research on and to begin production of complicated products, utilizing foreign experience in this field.

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Altogether, 25 new production plants are to be built, with a total of 22,000 workers. The production of medicines will be especially accelerated, namely antibiotic, vitamin, and hormone preparations; the production of plastics, particularly the thermoplastics such as polyvinyl compounds, acrylates, and, if the occasion arises, the polyethylenes, will also be stepped up.

Plants producing chemicals for use in the textile industry are to profit by the success achieved by foreign countries in the field of textile chemistry. The insecticide industry will also be greatly expanded. Until now, this industry has limited itself to the production of the traditional insecticides and fungicides; in the future, however, increasing amounts of new types of organic agents are to be produced (such as organic esters of phosphoric acid, etc.). When all the above-mentioned projects are completed, the chemical industry will employ about 88,000 persons, as compared with 59,000 in 1949 and 45,000 in 1947.

Heavy Chemicals and Fertilizers

The heavy chemical and fertilizer industries participated to a great extent in the general rise in production in 1949. According to the official figures listed below, and also according to reliable sources, more or less noteworthy gains have been realized in the production of almost all important products of these two industries. The official Wiadomosci Statystyczne gives the following production figures (in tons):

	1937	1947	1948	1949*
Calcium carbide	63,996	26,856	162,258	158,200
Fertilizers, total	497,820	432,744	628,248	780,659
Of this:				
Calcium cyanamide	68,100	120,816	158,244	165,000
Mixture of NH_4NO_3 and $CaCo_3$	18,876	70,260	129,792	103,354
Other nitrogenous fertilizers	133,332	46,812	51,024	88,015
Superphosphate	177,228	191,400	279,636	389,200
Other phosphorous fertilizers	99,660	2,856	8,856	33,300
Potash and other fertilizers	624	456	696	944

*Provisional figures

Moreover, 157,500 tons of lime fertilizer were produced in 1949, in comparison with 49,920 tons in 1947 and 64,775 tons in 1948.

A product of which there is always a pronounced shortage is sulfuric acid. Poland's sulfuric acid requirements have risen constantly within recent years. The needs of the superphosphate industry are particularly extensive, also the requirements of the synthetic fiber, coal-tar dye, explosives, and mineral pigments industries. In spite of the most intensive efforts, the prewar level of production has not yet been achieved, although

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numerous production installations in Slask have been added to the sulfuric acid plants already in existence. The reason is that sufficient amounts of zinc ore and pyrites have not been available for the production processes.

In 1938, 314,000 tons of sulfuric acid were produced in Poland, of which 112,000 tons were derived from pyrites and 202,000 tons from zinc ore. Not until 1948 did production again reach 221,000 tons, and in 1949 there was a reported increase of 26 percent, or a total production of about 278,000 tons. It is estimated that in 1955 the sulfuric acid requirements will amount to 400,000 tons, which must be covered by domestic production. Since the necessary amounts of sulfur-bearing ore will not be available despite the intensification of mining activities, it is intended to substitute gypsum, of which abundant quantities can be found in Poland, as a primary raw material. It is very probable that the chemists from East Germany will assist in the establishment of sulfuric acid production based on the use of gypsum.

The production of soda products, which is principally being handled by the former Solvay Plants, in Borek Falecki near Krakow and in Matwy near Inowroclaw, has for some time exceeded the prewar production level. Whereas about 87,000 tons of calcined soda and almost 30,000 tons of caustic soda were produced in 1938, the production of calcined soda rose to about 190,000 tons and that of caustic soda to approximately 47,000 tons in 1948. Last year /1949/ 300,000 tons of soda products were originally scheduled to be produced. However, this goal was not entirely achieved, although the production output of about 228,000 tons of calcined soda and about 57,000 tons of caustic soda is noteworthy. So far, the monthly output during 1950 has been about 10 percent higher than in 1949.

The use of fertilizers has increased during the postwar years. The average prewar consumption in Poland amounted to 1.66 kilograms of pure nitrogen, 3.09 kilograms of phosphoric acid, and 2.30 kilograms of pure potash per hectare of cultivated area. After completion of the current Six-Year Plan, the fertilizer consumption per hectare is to have increased to 12 kilograms of nitrogen, 15 kilograms of phosphoric acid, and 5-6 kilograms of potassium oxide.

Nitrogenous fertilizers are being produced mainly by the two large state-owned nitrogen plants in Chorzow and Moscice near Tarnow. The production of the various coking plants and gasworks is also significant; altogether they have an annual capacity of 18,000 - 19,000 tons of nitrogen. The Moscice plant was heavily damaged during the war, but since then it has not only been reconstructed, but has been expanded considerably. In 1938, the combined production output of this plant and the plant in Chorzow near Koenigshuette amounted to 43,000 tons of nitrogen, whereas the total output in Poland was only 53,500 tons. Of the 43,000 tons of nitrogen, 38,500 tons were in the form of fertilizers and 4,500 tons were in industrial nitrogen products. In 1938, the fertilizer output of these two plants consisted of 80,358 tons of calcium cyanamide, 20,771 tons of ammonium sulfate, 82,836 tons of calcium nitrate, 16,347 tons of mixed ammonium nitrate and calcium carbonate, 4,348 tons of calcium and ammonium nitrates, 3,925 tons of sodium nitrate, and fairly large quantities of mixed fertilizers.

Two new plants for the fixation of nitrogen are under construction. After their completion, the Polish productive capacity for synthetic nitrogenous products will increase to about 202,000 tons (in terms of pure nitrogen). With the inclusion of ammonium sulfate, by-product of the coking plants and gasworks, Poland will soon have a productive capacity of 220,000 tons of nitrogen.

There are numerous factories for the production of superphosphate which have an annual productive capacity of at least 800,000 tons. In 1949, only 50 percent of the productive capacity could be utilized because of the shortage of sulfuric acid; however, the year's output of 389,000 tons is double the 1937 production.

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Because of the difficulties resulting from the shortage of sulfuric acid, the further development of phosphate fertilizer production will be based in part on calcined phosphates. Recently, there has been great interest in a process which was developed in Soviet Zone Germany in 1949 and is now to be put into practice in a new plant.

In the first quarter of 1950, the production of superphosphate was 18 percent higher than in the same period of the previous year; it can be estimated that a total of 470,000 tons will be produced during the year. The raw phosphate is to be procured mainly from the USSR.

The supply of potash fertilizers is almost completely dependent on imports. The valuable potash deposits in East Galicia (Austria), which were exploited by the Potash Salts Corporation (S. A. Exploatacji Soli Potasowych) in Lwow, are in Soviet hands today. In 1938, 566,900 tons of the raw salts were obtained in this area.

Even though there are absolutely no difficulties connected with the import of potash from the USSR or Soviet Zone Germany, Poland is making earnest attempts to open up the potash deposits in the vicinity of Poznan, which were not discovered until after the war. With these potash salts, and the brown coal reserves also located here, as raw materials, a new chemical industry center is to be established in Poznan Wojewodztwo within the next few years.

Electrochemistry

The electrochemical industry comprises mainly the electrolysis of rock salt and the production of ferroalloys. The ferroalloys are of very specific importance with regard to rearmament. The production of ferrosilicon, ferrosilicoaluminum, ferrochrome, silicomanganese, silicon carbide, and electrocorundum has been especially well developed. No figures have been published as to the amount of production and export trade. In 1938, Poland imported ferroalloys valued at 4,500,000 reichsmarks, from Norway, Germany, Sweden, and Switzerland.

The development of the caustic soda industry, which is provided for within the framework of the Six-Year Plan, will also result in an increase in the productive capacity for chlorine. The demands for chlorine have constantly risen, due to the needs of the dye industry and of the factories producing insecticides, textile chemicals, and plastics. The prospects for profitable production of chlorine by electrolysis are favorable, because salt and cheap electric power are available. The question as to whether the old alkali electrolysis installations, which operate on the Siemens-Billiter diaphragm system, are to be repaired, or whether entirely new equipment is to be set up, has not yet been definitely decided. However, the central administration offices for the chemical industry will at least arrange for a completely modern mercury electrolysis installation with a daily output of 20-30 tons of chlorine, which will make possible the preparation of pure caustic soda for the artificial silk industry.

The following plants are the most important producers of heavy chemicals and fertilizers:

Panstwowa Fabryka Zwiazkow Azotowych "Moscice" (Moscice State Nitrogen Compounds Plant). Located in Moscice near Tarnow. Nitrogenous fertilizers, industrial grade chemicals, sodium hypochlorite, hydrochloric acid, caustic soda, chloride of lime, methyl alcohol, formaldehyde, etc. Employs about 2,000 persons.

Panstwowa Fabryka Zwiazkow Azotowych "Chorzow" (Chorzow State Nitrogen Compounds Plant). Located in Chorzow near Koenigshuette. Sodium nitrate, ammonia, ammonium nitrate, ammonium carbonate, carbide, nitric acid and, other products.

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Zaklady Chemiczne "Elektro" in Laziska Gorne (Elektrochemical Plant in Laziska Gorne, Gorny Slask). Carbide, aluminum sulfate, ferroalloys, such as ferrochrome, etc.

Fabryka Elektrod Weglowych "Plania" (Plania Carbon Electrode Plant in Raciborz, Gorny Slask). Located in Raciborz. Electrodes for production of carbide and for the metal industry. Products are exported to Bulgaria, Czechoslovakia, Denmark, Sweden, Norway, Hungary, Switzerland, Yugoslavia, and Japan.

Przemysl Chemiczny Gdansk (Chemical Industry) Superphosphate, sulfuric acid, hydrochloric acid.

S. A. Fabryk Chemicznych "Radocha" (Radocha Chemical Plants, Inc, Sosnowiec). Located in Sosnowiec. Chlorate, perchlorate, tartaric acid, citric acid, sodium phosphate, calcium diphosphate, sodium bitartrate, potassium bitartrate, potassium citrate.

Zaklady "Solvay" w Polsce (Solvay Works in Poland). Located in Borek Falecki near Krakow. Caustic soda, ammonia soda.

Zaklady "Solvay" w Polsce (Solvay Works in Poland). Located in Matwy near Inowroclaw. Ammonium carbonate, caustic soda, sodium bicarbonate, calcium chloride.

Coal-Tar Products

Before the war, Poland had import requirements for organic chemical products, such as dyes, intermediate products, medicines, and plastics, valued at about 20 million reichsmarks. With the help of the numerous Slask coking plants and tar distillation works, it is today possible to build up a multiplex production which will make possible a considerable export trade in finished products. Today benzene, toluene, cresol, phenol, and naphthalene are already being exported. Later, less of these raw materials and more of the finished products which are based on them are to be exported.

There are now 20 coking plants in operation which produce by-products. Eleven of these are located in the recovered German territory. The production of coke has more than doubled in comparison with prewar times. It amounted to about 5,700,000 tons in 1949, as compared with 5,090,000 tons in 1948 and 2,290,000 tons in 1938.

Reliable estimates as to the amount of crude tar collected are not obtainable. According to a report published in 1948, the production of 3 million tons of coke should correspond to a crude tar yield of approximately 100,000 tons. Thus, crude tar production of about 190,000 tons can be assumed for 1949. Accordingly, the amount of crude benzene produced can be estimated at about 45,000 tons.

In 1938, the coking plants in the eastern part of Gorny Slask produced 112,100 tons of crude tar, 36,420 tons of crude benzene, and 30,600 tons of ammonium sulfate. In 1938, the tar distillation plants and benzene factories located there produced the following: 21,880 tons of prepared tar, 55,570 tons of pitch, 29,680 tons of tar oil, 3,755 tons of naphthalene, 1,060 tons of phenol and cresol, 110 tons of pyridine bases, and 27,800 tons of refined benzene. From these production figures, one can estimate the output of individual products for the 20 coking plants which were in operation in 1949.

Medical Products

The consumption of medical products in Poland is still somewhat limited in comparison with the western European countries. The most important plants were situated in the Warsaw district and were either heavily damaged or completely

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destroyed during the war. The reconstruction of this branch of industry has progressed rather slowly because of the lack of technical personnel for the development of valuable preparations. Although the domestic requirements are small, up to the present, 80 percent of them have had to be covered by imports.

Although many small laboratories are still privately owned, most of the production is handled by 12 state-owned plants which have all developed from old established firms. Their products mainly comprise standard preparations which had already been produced before the war, such as pharmaceuticals, vitamin preparations, organotherapeutic and hormone preparations, bismuth derivatives, alkaloids, insulin, serums, and vaccines. Since 1949, the L. Spiess and Son chemical firm has also been producing penicillin in commercial quantities in its factory located in Tarchomin, near Henrykow. In the near future, it is also intended to begin the preparation of streptomycin and perhaps of other new types of antibiotics.

The following are the most important firms producing medical products:

Laboratorium Farmaceutyczne "Medica" Poznan (Medica Pharmaceutical Laboratory). Located in Poznan. Bismuth preparations.

Pabianicka S. A. la Przemyslu Chemicznego "Ciba" (The Pabianice Ciba Corporation for the Chemical Industry). Located in Pabianice southwest of Lodz. Special chemical products, organic dyes, and intermediate products.

Panstwowa Fabryka Chemiczno-Farmaceutyczna, Dr A. Wander (Dr A. Wander State Chemical-Pharmaceutical Plant). Located in Krakow. Special pharmaceutical products, dietetic products, textile and tanning chemicals, and cosmetics.

"Pebeco" S. A. Poznan (Pebeco Inc). Located in Poznan. Leucoplast and Hansaplast /trade names/. Exports products, for example, to Yugoslavia.

Przemyslowo-Handlowe Zaklady Chemiczne, L. Spiess i Syn (L. Spiess and Son Chemical Works). Located in Tarchomin near Henrykow. Special products having barbituric acid as a base, guaiacol derivatives, remedies using benzoylamino-benzene-sulfamide as a base, penicillin, etc. Various types of special products are exported to the Balkan countries and to Sweden.

Towarzystwo Przemyslowo-Chemiczno-Farmaceutyczne (Industrial Chemicals and Pharmaceuticals, Inc), formerly "Mgr Klawe" S. A., Warsaw. Located in Warsaw. Preparations for injections, special vitamin preparations, hexamethylenetetramine derivatives, etc. This firm exports to Palestine.

Warszawska Fabryka Eteru Sp. Zo. o. Warsaw (Warsaw Ether Factory, Ltd). Located in Warsaw. Ether for anesthesia; exports to Egypt, Palestine, and Turkey.

Zaklady Chemiczne "Motor Alkaloida" S. A. (Motor-Alkaloida Chemical Plant, Inc). Located in Kutno. This firm originated as the "Motor" AG chemical-pharmaceutical plant in Warsaw. Its products include morphine, ethyl morphine, codeine, salicylic acid and its derivatives, barbituric acid preparations, silver salts, galenicals.

Zaklady Produkcyjne Panstwowego Zakladu Higieny (Manufacturing Plant of the State Institute of Hygiene). Located in Warsaw. Serums and insulin. Exports to Bulgaria, Yugoslavia, Czechoslovakia, and the USSR.

In 1949, West Germany shipped medicines valued at 555,000 Deutsche marks to Poland. Recently, a new trade agreement, covering the period 1 July 1950 to 30 June 1951, was signed, whereby Poland has committed herself, by specific provisions, to increase considerably the import of medicines.

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Coal-Tar Dyes

Poland's requirements of coal-tar dyes are very extensive because of her well-developed textile industry (Bielsko and Lodz) which today has a higher output than before the war. Consequently, the market for dyes and intermediate products is also favorable. The domestic coal-tar-dye industry is strongly subsidized by the government, to eliminate gradually the dependence on foreign imports.

Last year, Poland's dye production, which amounted to 3,700 tons, was almost twice the 1938 output of 1,956 tons; in 1948, 8,108 tons were produced, and in 1947, 2,112 tons. Despite the increased domestic production, there is still a considerable importation of coal-tar dyes and intermediate products, because the expansion of Poland's textile industry also involves larger dye requirements. In 1938, the total imports in this group, about half of which were supplied by Germany, were valued at 4,900,000 reichsmarks; in 1949, coal-tar dyes and intermediate products valued at 4,130,000 Deutsche marks were imported from West Germany alone. Also, the Polish market proved able to absorb large quantities of West German dyestuffs in 1950.

The following are the most important firms producing dyes and intermediate products:

Pabianicka S. A. dla Przemyslu Chemicznego "Ciba" (Pabianice Ciba Corporation for the Chemical Industry). Located in Pabianice, southwest of Lodz. Vat dyes, aniline dyes; also sodium sulfide, sodium bisulfite, and sodium thiosulfate.

Zaklady Chemiczne "Boruta" (Boruta Chemical Plant). Located in Zgierz, northwest of Lodz. Numerous dyes and intermediate products, such as nitrobenzene and beta naphthol.

Zaklady Chemiczne Winnica S. A. (Winnica Chemical Plant, Inc). Located at Winnica, Post Henrykow near Warsaw. Anthraquinone and other dyes.

Paints and Lacquers

Before the war, the output of the mineral pigment and lacquer industry averaged 25 million zlotys per year. After the first few postwar years, production of these items exceeded the former level. Particularly advanced in their development are the zinc oxide and lithopone plants, which are almost exclusively located in Gorny Slask. In 1948, 14,962 tons of zinc oxide and 2,313 tons of lithopone were produced. The production of minium amounted to 3,237 tons and that of dry pigments (body colors) to 2,416 tons. The production of finished paints and lacquers increased from 2,068 tons in 1947 to 4,915 tons in 1948.

In 1949, because of the increase in demand on the part of the construction business, there was a substantial increase in the output of all these products.

Part of the production is designated for export. The most important export item is zinc oxide, which is shipped to India, Brazil, China, Denmark, Finland, Norway, Sweden, and Switzerland. Powdered zinc is also exported in large quantities. For the year of the new agreement, which begins on 1 July 1950, Poland will deliver 100,000 US dollars' worth of powdered zinc to West Germany. On the other hand, the Polish market is capable of absorbing many different types of mineral pigments; in 1949, Poland imported products of this type from West Germany which were valued at 231,000 Deutsche marks (65,000 US dollars).

The following firms are of importance in the production of paints and lacquers:

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Panstwowa Fabryka Chemiczna "Giesche" (Giesche State Chemical Plant). Located in Katowice-Bogucice. Minium and litharge. The capacity for both products amounts to 220 tons per month, but the actual production is considerably less. The plant is a part of the former Giesche, A G in Katowice, which belonged to the Silesian American Corporation, a holding company. Connected with this firm was the Georg von Giesche's Heirs firm, Wroclaw, which owned 49 percent of the original capital.

Panstwowa Fabryka Bieli Cynkowej i Minii Olowianej "Huta Marta" (Huta Marta State Zinc Oxide and Minium Plant). Located in Olawa near Wroclaw. Zinc oxide and minium. Exports to Europe and overseas.

Zaklady Bieli Cynkowej i Przetworow Chemicznych "Huta Feniks" (Huta Feniks Zinc Oxide and Chemical Products Plant). Located in Bendzin. Zinc oxide. The plant has a capacity of 13-15 tons daily. Exports to China, Indonesia, the Near East, Scandinavia, and the US.

Zaklady Chemiczne "Czarna Huta" (Czarna Huta Chemical Plant). Located in Tarnowskie Gory. Lithopone, blanc fixe, aluminum sulfate, borax, boric acid, alum, copper sulfate, tin oxide, barium chloride, barium nitrate, zinc sulfate, sodium perborate, cupric oxide. This firm developed from the Hugo Foundry of the Henkel Chemical Plant, Ltd, near Tarnowskie Gory. In 1938, it employed 180 persons and had a monthly capacity of 200 tons of lithopone, 260 tons of aluminum sulfate, 30 tons of blanc fixe, 70 tons of borax, 20 tons of zinc sulfate, 30 tons of copper sulfate, and 30 tons of sodium perborate. After the war, the production of active carbon was started.

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